E.—MANAGEMENT OF THE VESSELS.

By JOSEPH W. COLLINS.

52. EVOLUTIONS OF THE FISHING SCHOONER.*

There are numerous evolutions to be performed in conforming the movements of the vessel to the changes of the wind; also, in changing her course, and in making those maneuvers incidental to fishing which are peculiar to the New England fishermen, whose methods of seamanship are in many respects very different from those elsewhere in use.

These evolutions may be discussed under the following heads: (1) tacking, or coming about; (2) jibing, or wearing; (3) boxhauling, or hauling around; (4) shooting to; (5) heaving to, or lying to; (6) bringing a vessel to an anchor; (7) bringing a vessel to a drag; (8) getting under way; (9) breaking out anchor under sail; (10) shooting alongside of a seine-boat; (11) shooting alongside of a dory; (12) shooting alongside of a wharf; (13) lee-bowing another vessel; (14) running a vessel upon a lee shore; (15) jumping a vessel off a ledge on a lee shore.

TACKING, OR COMING ABOUT.

The act of tacking a fishing vessel is precisely the same as with any other fore and aft rigged vessel. This is done by putting down the helm and making fast the jib-sheet to leeward, so that, as the vessel comes to the wind, the jib will take aback and cause her to fall off in the opposite direction. To tack an ordinary fishing schooner takes from forty to eighty seconds, the time varying with the strength of the wind, the force of the waves, and the peculiarities of the vessel. The only danger in this evolution is that of "missing stays" when the vessel is in a dangerous place on a lee shore or in a narrow channel. Fishing vessels very rarely miss stays. The orders for tacking are: (i) *Stand by for stays;* (ii) *Tend the jibs* (this means to put the "tail-rope" on the jib-sheets, and if the vessel carries a flying-jib, to slacken the lee sheet and stand by to trim down on the other sheet as the vessel comes around); and (iii) *Let her come round;* to which the man at the wheel answers: *Hard-a-lee*, as he puts his helm down.

JIBING, OR WEARING.

This evolution on a fishing schooner is the same in principle, as on other sailing vessels. It is precisely the opposite of tacking, the direction of the vessel being changed while running before the wind, so that the stern rather than the bow crosses its direction. With a moderate wind the act of jibing occupies but a few seconds, but when the wind is strong and the sheets must be hauled in and gradually slackened out on the opposite side, it may take from ten to twenty minutes. The orders for jibing are as follows: (*a*) *With light winds*, (i) *Put the wheel up and let her jibe over* (to the man at the wheel). As the direction of the vessel is changed the wind catches the sails aback, and of their own accord they pass over to the other side of the vessel.† The flying-jib sheets are properly adjusted in obedience to the order, (ii) *Draw away the flying-jib.* (*b*) *With stronger winds.* When running before the wind with a fresh breeze a schooner usually has a boom-

* This chapter, as well as that which follows, might very properly be included in the description of the fishing schooner, but as it illustrates the duties of the fishermen under certain conditions, we have thought it proper to publish it in this place.

† This is called "jibing all standing," or "North River jibe," and is common on the Hudson River.

tackle, which is attached to the main boom and hauled taut to prevent the boom from swinging in when the vessel lurches in a sea. The orders are, (i) *Call all hands to jibe the mainsail.* This order is given to one man, who calls to the men in the forecastle, *Stand by to jibe the mainsail; all hands on deck.* The skipper usually repeats the same order to the men in the cabin. (ii) *Unhook the boom-tackle.* When necessary to jibe in this manner the vessel is usually running winged out, with the foresail on the opposite side to the mainsail; but if not, it may be necessary to haul aft on the fore-sheet and jibe it over before the mainsail is jibed. In this case the order is, (iii) *Gather aft on your fore-sheet and jibe the foresail.* After the foresail is jibed over, and the boom-tackle has been unhooked, the order is, (iv) *Haul aft the main sheet.* When the main sheet is sufficiently flat, the order is given, (v) *Take a turn with your main-sheet,* and a round turn is taken on the cavil. The next order is to the man at the wheel, (vi) *Put up your wheel and let her come over.* The vessel having changed her course, and the wind catching on the opposite side of the sail, the next order is, (vii) *Slack off the main sheet and hook on the boom-tackle.* The boom-tackle is now hooked on and hauled taut; the lee flying-jib-sheet is then hauled taut in obedience to the order, (viii) *Draw away your jibs,* and the vessel pursues her way upon a new course. When the vessel has been sailing wing and wing it is not usually necessary to jibe the foresail, that being already on the proper side; but when it is necessary, after jibing the mainsail, to wing the foresail out on the other side, this is generally done in obedience to the orders, (i) *Wing out the foresail on the other side.* When the foresail is winged out, the fore-boom is usually held in position by a guy, which answers the same purpose as the boom-tackle on the main boom. One end of the guy is fastened to the end of the boom, and the other taken to the bow of the vessel. The next order is, (ii) *Slack up the fore-boom guy and haul aft the fore-sheet.* The helmsman is cautioned by the order, (iii) *Be careful how you steer, and don't let her come over too quick.* When the fore-sheet is sufficiently flat, the next order is, (iv) *Take a turn with your sheet;* and the helmsman is then directed to, (v) *Let it come over.* As the sail catches full on the opposite side, the order is, (vi) *Slack away on the fore-sheet and haul taut the fore-boom guy.*

There is considerable danger attendant upon jibing when there is a fresh breeze, and booms are sometimes broken or even the masts are carried away. For this reason it is quite common for vessels to tack when the breeze is fresh instead of "wearing round," although it is necessary in this case to make nearly an entire circle and thus take much more time for the evolution. In order to avoid accidents when jibing, it is customary for some to slacken down the peaks of the foresail or mainsail, or both, so that less strain will be brought to bear on the ends of the booms and on the mastheads. This, however, involves the danger of "goosewinging" the sails.

BOXHAULING OR "HAULING ROUND."

This evolution differs entirely from that performed by a square-rigged vessel and called by the same name. It is generally done on a fishing vessel after she has been lying to under a foresail and mainsail, in order to get her upon the opposite tack without the necessity of setting more sail and gathering headway. In order to understand this evolution it may be stated that when a vessel is lying to in this manner, the main boom is guyed out broad over her quarter by the boom-tackle, and the fore-sheet is eased off slack, so that the sail holds no wind, and the wheel is hard down. The vessel is governed by her mainsail and the action of the helm, lying with her head within four or five points of the direction of the wind and drifting to leeward. When it is necessary to boxhaul, the order is given, (i) *Haul aft the fore-sheet.* This is pulled in sufficiently, when the order is, (ii) *Make fast fore-sheet, unhook the boom-tackle, and haul round.* The main sheet is now hauled aft rapidly, the helm being still kept down, and as the vessel comes nearly head to

the wind the order is, (iii) *Stand by to hoist the jib.* When the vessel is head to the wind the order is, (iv) *Hoist away on the jib.* At the same time it is customary to also give another order, (v) *Hook on the crutch-tackle and haul over on the main boom.* As the jib is hoisted up, the sheet being made fast on the proper side, that is, the side which was to leeward, it catches aback and the vessel's bow is swung off from the wind. The next order, as her sails get full, is, (vi) *Draw away the jib.* Under some circumstances the vessel may gather stern-way while this evolution is being performed, in which case it is necessary to give the order, (vii) *Shift the wheel.*

SHOOTING TO.

This evolution is peculiar to fore and aft rigged vessels, perhaps especially to fishing vessels. It is performed for a variety of purposes, such as sounding, speaking a vessel, or at any other time when it is desirable to deaden the headway without hauling down the sails or heaving to. To shoot a schooner to, it is only necessary, when sailing by the wind, to put the wheel part way down, and as she comes head to wind to keep her in that position by the management of the helm until her headway is stopped. One who is skillful in managing a vessel in this manner may be able to sound even in more than 100 fathoms of water with little trouble and loss of time, much less than would be taken if the vessel were hove to.

When speaking another vessel it is customary to pass by her stern and shoot to alongside of her. In this way the captains are enabled to converse, under ordinary circumstances, for a number of minutes. There are other purposes for which this evolution is performed. These will be considered below.

HEAVING TO, OR LYING TO.

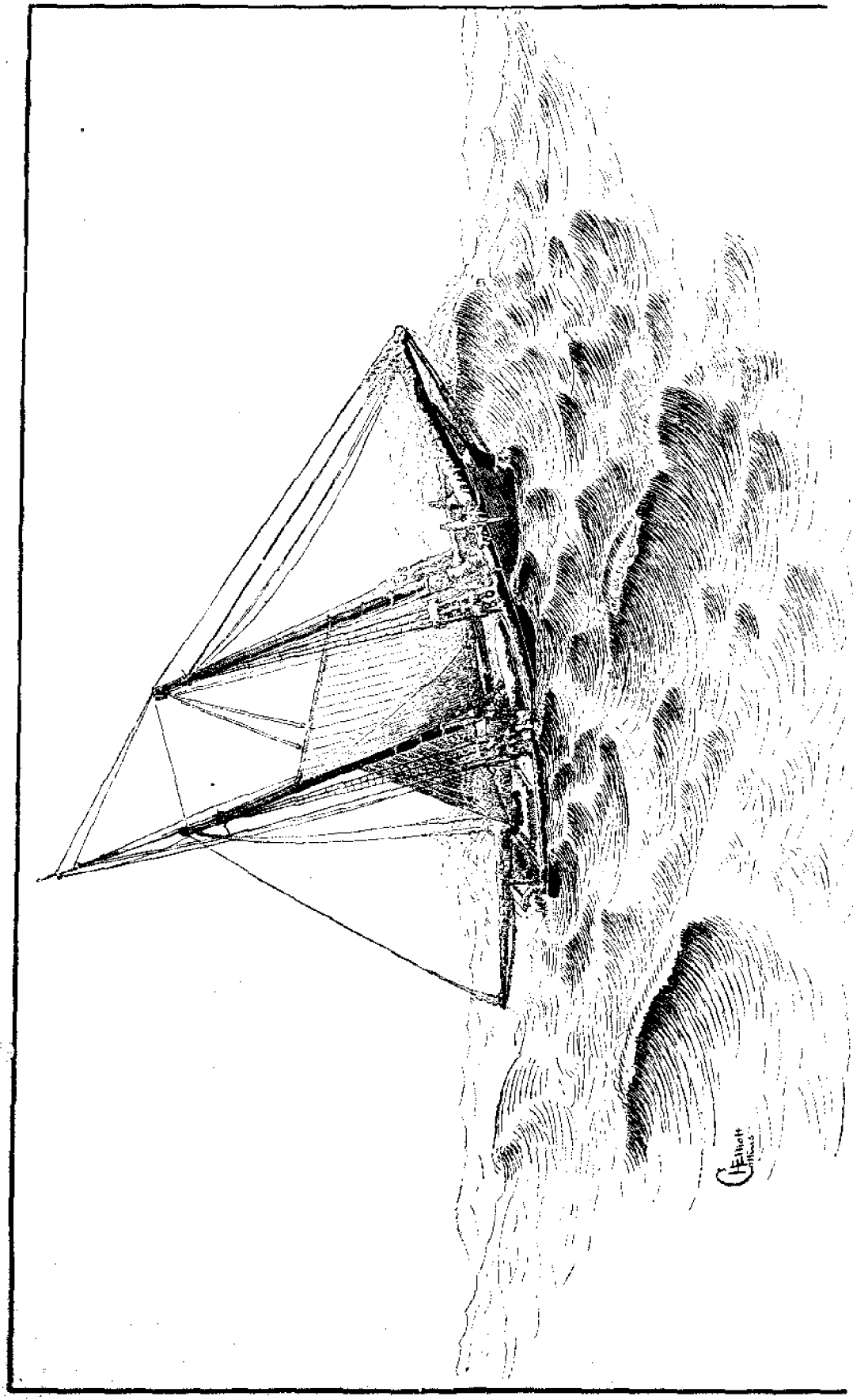
This evolution may be performed in several ways:

(*a*) *Heaving to with jib to windward.* (*b*) *Heaving to under two sails.* (*c*) *Heaving to under foresail.* (*d*) *Heaving to under mainsail.*

A vessel may be "hove to" under various circumstances, either for a temporary purpose, such as taking a boat on board, or picking up anything which has dropped overboard. Again, on the fishing ground, when sounding, while making observations upon the fish, or waiting for their appearance, or when waiting for the small boats which are setting trawls or otherwise engaged; or, again, in a storm, when it is not safe to be under other sail. Vessels frequently lie to on the fishing grounds at night in order to keep their position, and in the day-time to catch fish.

LYING TO WITH A JIB TO WINDWARD.—This is accomplished by fastening the jib-sheet on the weather side and putting the wheel down, the fore-sheet being sometimes slackened off and at other times trimmed in its proper place. This is a favorite method with the mackerel seiners during the day, when they are watching for the appearance of fish, and also for the vessels engaged in the haddock fishery, while on the fishing grounds. A vessel lying to under this sail can be filled away and managed with little delay and by a few persons.

HEAVING TO UNDER TWO SAILS.—The method of heaving to with mainsail and foresail was the favorite one with mackerel catchers when that fishery was prosecuted with hook and line, and is also practiced to some extent by other vessels. To heave to in this manner it is simply necessary to guy out the main boom, haul down the jibs, and ease off the foresheet, at the same time putting the helm down. The orders are given as follows: (i) *Stand by to heave to.* (ii) *Ease off the main-sheet; hook on the boom-tackle and haul it taut.* (iii) *Haul down the jibs.* (iv) *Ease off the fore-sheet;* and (v) *Let her come to.* In obedience to the last order the wheel is put down so that the vessel comes up to the wind. As the vessel comes to the wind her mainsail catches aback and her



Fishing schooner lying-to in a gale on the Banks, under riding sail and double-reefed foresail

Drawing by H. W. Elliott and Capt. J. W. Collins.

headway is deadened; she soon stops, and makes a square drift at right angles with the direction in which she heads. A vessel is also very often hove to in this manner when sounding or fishing for cod on the Banks and elsewhere.

HEAVING TO UNDER FORESAIL.—A vessel is "hove to" under a foresail either to hold her position on the fishing grounds in the night, as is the custom with the mackerel catchers, or during a heavy storm or gale, when it is not practicable to have mainsail and jib set. In the latter case, however, the foresail is always reefed, the other sails are taken in and furled, the foresheet trimmed aft, and the wheel put down. Sometimes a riding sail is set on the mainmast to keep the vessel steady and closer to the wind than she would be under reefed foresail alone. The vessel in this way heads within about five points of the wind and goes ahead slowly. The leeway is usually from three to six points—that is, the course is from three to six points to leeward of where she heads, the amount of leeway depending somewhat on the force of the wind and waves.

HEAVING TO UNDER MAINSAIL.—Heaving to under a mainsail is an evolution which is less common than formerly. This method was practiced almost exclusively by the mackerel catchers when engaged in hook-and-line fishing and was usually done to give the vessel a steadier and square drift. It is done in the same manner as heaving to under two sails, with the exception that the foresail is lowered and furled.

BRINGING A VESSEL TO ANCHOR.

ON THE BANKS.—If the vessel is under bank sail (for description of this sail see under "Schooner rig") it is customary to haul down the jib and to ascertain the depth of water by sounding. If the proper depth is obtained the orders are given, (i) *Let go the anchor;* (ii) *Pay away (or "stick out") the cable;* while this is being done by part of the crew the next order is (iii) *Furl the jib.* The foresail is usually kept up until the anchor reaches the bottom and occasionally for a few minutes later. The order is then given, (iv) *Lower away (or haul down) the foresail.* The foresail is then furled (being sometimes first reefed). When it is thought that sufficient cable has been paid out to enable the anchor to catch the bottom the order is given, (v) *Weather-bit the cable.** As soon as the anchor catches the bottom the vessel fetches up and swings head to the wind; the order is then given, (vi) *Strad her up.*†

The method of anchoring on the Banks is much the same in rough weather, the only difference being that sometimes the foresail is taken in sooner. While it is quite a common occurrence to bring a vessel to anchor in moderate weather with mainsail up, this is rarely undertaken with strong winds and a rough sea. When this is done, however, the vessel is hove to under two sails before the anchor is let go, and while the cable is being slacked away, or "paid out," the foresail is lowered and furled, and the jib is also furled. When it is supposed that there is sufficient cable out for the vessel to fetch up, the order is given, (i) *Stand by to take aft the main sheet.* As the vessel swings head to the wind the boom-tackle is slackened and the sheet is pulled in until the main boom is directly amidships or parallel with the direction of the vessel. The crutch-tackles from each side of the stern are then "hooked on" to steady the boom, which is lowered into a crutch and the tackles are hauled taut. The mainsail is then usually lowered away and furled,

* Weather-bitting the cable is to take an extra turn with it round the end of the windlass and over the windlass-bit, so that it can be held firmly from slipping or "rendering" when the vessel fetches up, and consequently brings a heavy strain on the cable.

† "Stradding the cable up," is winding round it a number of braided ropes called strads, each from 9 to 12 feet long. These are pointed at the ends, and one after another is put on until several fathoms of the cable have been covered, so that the lower part of that which has been stradded will reach nearly to the water, while the upper part is some distance inside of the hawse-pipe. This is done to prevent the cables from chafing in the hawse-pipe or about the stem.

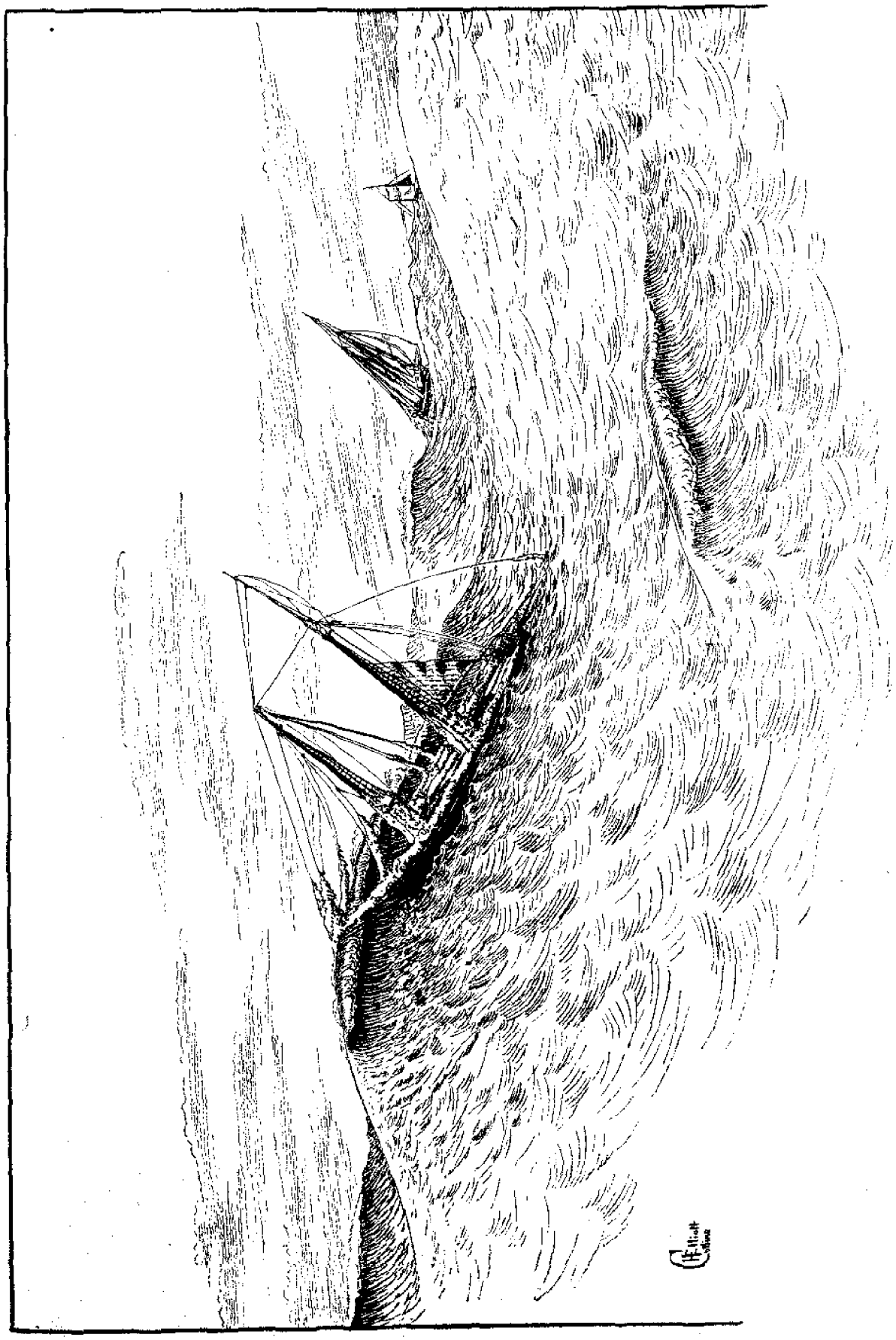
except in special cases, when it may be temporarily kept up. Occasionally, when anchoring in this way, it may be desirable to lower the mainsail before the foresail is taken in.

ANCHORING IN HARBOR IN SHOAL WATER.—To bring a fishing schooner to anchor in a harbor, if there is sufficient room, the jib or jibs are first lowered and the helm put down so that the vessel shoots dead in the wind until her headway ceases. When she has stopped and begins to gather sternway the anchor is let go. There are, however, quite a number of ways of doing this, dependent altogether upon surrounding circumstances. If running into a harbor with a fair wind where there is a large fleet at anchor, there may not be room enough to handle a vessel in the manner just described. The after sails are then first taken in and furled, and last of all the jib is lowered. The anchor is let go "under foot" while the vessel is still forging ahead. Sometimes all the sails but the mainsail are hauled down; at other times all but the foresail. Indeed, the management of the sails varies with the occasion, and therefore no definite rule can be laid down.

BRINGING A VESSEL TO A DRAG.

The act of bringing a fishing vessel to a drag is necessary only in the most furious gales. As a general thing, when this is done, the vessel is lying to under a close-reefed foresail, with, occasionally, also a reefed riding-sail set on the mainmast. On fishing vessels it is customary to attach the drag, whatever it may be, to the riding anchor on the port side, and for this reason, the vessel, if she is lying to on the starboard tack, is worn around so that she will be on the port tack before the drag is put out. Sometimes the seas are so dangerous that it is impracticable to wear around, and in such a case the starboard tack must be used instead. The simplest form of using a drag on a fishing vessel, when drifting in deep water, where there is no probability of the anchor taking bottom, is only to throw out the anchor and pay out from one to two hundred fathoms of cable. The foresail is then taken in and furled, and the reefed riding-sail, or perhaps the peak of the "balance-reefed mainsail," is set, in order to keep the vessel steady in the sea and close to the wind. The necessity of frequently heaving the vessel to a drag in the extremely violent gales which the fishermen encounter has led to the substitution of several devices much more effective than a simple anchor in offering a resistance to the water and keeping the vessel's head near the wind. One method is to sling one or more casks or barrels, and to attach them to the anchor. The casks have holes in them so that they are soon filled with water and they then offer considerable resistance to the drifting craft and assist materially in keeping the vessel in proper position. Planks and spars have been used for the same purpose, being slung at the ends or in the middle. Some special appliances have also been made, constructed of plank, canvas, and iron. The last mentioned are commonly made fast to the anchor and cable, which are paid out in the manner described. It is probable that with a suitably devised apparatus much better results could be obtained by simply attaching it to a hawser, without any anchor.

The practice of carrying drags or floating anchors is, unfortunately, too much neglected on our fishing vessels. The object of this form of apparatus is to prevent foundering of sea-going vessels when lying to in heavy gales, especially when sails have been blown away, or when from other causes a vessel has become unmanageable, or is lying in a dangerous position. Unless a vessel is provided in such an emergency with some sort of a drag to be put out at the bow, so as to prevent her from falling into the trough of the sea, she is liable to meet with serious disaster, amounting in many cases to an entire loss of the ship and crew. It is believed by many whose experience renders them capable of judging correctly that a large percentage of the loss by foundering which occurs to the fishing fleet of New England might be obviated by the use of properly constructed drags. As is well known, heretofore seamen have generally been compelled in such



Fishing schooner at anchor in winter on the Grand Banks, riding out a gale.

Drawing by H. W. Elliott and Capt. J. W. Collins.

emergencies to rely on some sort of floating anchor improvised from spare material on shipboard, such as spars, casks, &c., the rigging of which is generally attended with much danger and delay, at a time, too, when the utmost dispatch is desirable, if not imperative. And when completed these rudely constructed affairs are rarely, if ever, found to answer well the purpose for which they were designed, shipwreck and loss of life often being the result of their faulty construction. Unfortunately, too, there is created a prejudice in the seaman's mind against using such contrivances, and unless provided with apparatus specially designed for this purpose he must take the fearful alternative of chance to insure his safe return to port.

To obviate these difficulties various improved forms of drags or floating anchors have been designed, some of which are acknowledged to be meritorious; but it is a somewhat remarkable fact, in view of the serious losses which have occurred to the fishing fleet, that almost none of the vessels are provided with even the simplest form of sea anchor, which, used in conjunction with a small amount of oil, might often prevent serious disaster.

GETTING UNDER WAY.

The usual method of getting under way in a harbor is: (i) to hoist the mainsail; (ii) to hoist the foresail (sometimes the main gaff-topsail is set at the same time); (iii) to heave up the anchor; (iv) (as the anchor breaks ground) to hoist the jib or jibs, and fill away, although the head-sails are not always hoisted until the anchor is up to the bow; (v) the anchor is catted and taken on the bow; (vi) the staysail or other light sails that may be required are set.

There are several other methods of getting under way in a harbor, dependent wholly on circumstances, such as first heaving up the anchor and filling away under the jib, and afterward hoisting the other sails; getting under way under reefed sails, and also under the mainsail and jib or jibs.

In getting under way on the Banks the anchor is first heaved up and taken on the bow; the foresail is then loosened and hoisted, and after that the jib. The vessel is then under "bank-sail," since she also has a riding-sail up, and, unless she is about to go a considerable distance, no other sail is set, except, perhaps, the flying-jib or staysail. If, however, it is necessary to set the mainsail, the riding-sail is first hauled down and the mainsail hoisted in its stead. If the winds are light and the vessel going a long distance, a main gaff-topsail is also usually set.

BREAKING OUT ANCHOR UNDER SAIL.

This evolution is rarely performed, except under some sudden emergency when it is not practicable to weigh the anchor. Fishermen, while out in their dories hauling trawls, are sometimes caught to leeward in a squall, or the wind may be blowing too hard to allow them to reach their vessel. At such a time, to prevent the loss of the cable and anchor, and to rescue the men, the foresail and jib are hoisted, and an endeavor made to break the anchor clear of the bottom. By this means the vessel may be brought far enough to leeward for the men in the dory to get on board. There are a few instances on record where this has been successfully accomplished, and the lives of several men have thus been saved.

It is a very common occurrence for the halibut vessels, when lying in deep water, to heave short on their cable and then to hoist the sails and break the anchor out in that manner. They then tow it along to another position on the edge of the bank instead of heaving it up to the bow, which would take several hours. At other times they heave in the cable until the anchor is broken out from the bottom, and, setting sail in the same manner, it is towed along, sometimes for a distance of seven or eight miles.

We give the following as an instance of breaking out an anchor under sail in order to rescue

men who were to leeward: In October, 1878, the schooner Marion, of Gloucester, was lying on the southern edge of Banquereau at anchor in 150 fathoms of water. The dories had been out to haul the trawls, and all had succeeded in reaching the vessel except one, which had been detained to leeward, and, at the time of starting for the vessel, was more than a mile distant. The wind had been blowing fresh all the morning and was increasing rapidly. There was but little prospect of the dory reaching the vessel. The ordinary expedient of paying down another dory, attached to a buoy and line, was resorted to and more than a thousand fathoms of buoy-line paid out. The men in the dory succeeded in getting hold of this, but unfortunately the line parted and only one thing could then be done to rescue the men. This was accomplished as follows: The foresail was hoisted and then the jib, which had been guyed out on one side so that the wind would catch it aback and fill the vessel away. The anchor, having firm hold on the bottom, did not at once break out, but it finally let go its hold, after which the vessel ran to leeward and the men and dory were picked up. When vessels are at anchor in shallow water on rocky bottom, the anchor sometimes becomes caught in the bottom, or "rocked," as it is called. It is then necessary that sail be set, and, by tacking back and forth, it may be possible to clear the anchor and thus prevent its loss.

SHOOTING ALONGSIDE OF A SEINE-BOAT.

This is a maneuver peculiar to the mackerel fishermen engaged in purse-seining, and it is one which requires a considerable amount of skill and judgment in its execution. To shoot a vessel to, or to heave her to, alongside of a seine-boat so that she will stop headway almost at a given point, or within a few feet of it, requires an intimate knowledge of the peculiarities of a vessel, and a skillful management of sails and helm, especially since this must be done under different circumstances, which vary with the strength of winds, tides, and sea. The ordinary method is the same as heaving to under two sails, which we have already described; at other times, perhaps, only under the mainsail, the evolution being performed in such a manner that the vessel shoots to close alongside of the seine boat, so that a rope may be thrown to the men in it, the vessel at the same time stopping short at that point. Long practice and an intimate knowledge of the vessels has enabled our fishermen to perform this evolution with a precision and exactness truly surprising.

SHOOTING ALONGSIDE OF A DORY.

In some branches of the fisheries, especially the haddock fishery, the shore cod fishery, and, occasionally, in the halibut and bank cod fishery, the vessels make "flying sets," or, as it is more frequently termed, "set under sail." This particular method of setting trawls will be discussed elsewhere. It is unnecessary to go into details here further than to state that the vessels, instead of being anchored, are kept under sail while the trawls are being set and hauled. While the fishermen are out in the dories setting and hauling, the vessel is managed by the captain and cook, and whenever one of the dories has finished the operation or has secured a load of fish, the vessel is shot to close alongside of it, so that it may come on board at once. This evolution is often performed when there is a strong wind and quite a rough sea, and it requires the same amount of knowledge and skill in handling the vessel as it does to shoot alongside of the seine-boat. In the latter case, though it is not absolutely necessary that the vessel should shoot so close to the dory or stop so short, the feat is more difficult because there are only two men to manage the vessel. As a general thing the vessel is shot to, or hove to, with her jib to windward, and sometimes the fore-sheet is eased off, so that the vessel makes a drift nearly at right angles with the direction in which she heads. At other times, especially in rough weather, when there is

Fishing schooner bound home in winter; head-reaching under short sail; deck, sails, and rigging covered with ice.

Drawing by H. W. Elliott and Capt. J. W. Collins.

a sufficient number of men on board to accomplish it, the vessel is hove to close alongside of the dory under two sails, and in all respects this evolution is then similar to that of shooting to alongside of a seine-boat. There are, perhaps, some other ways of shooting to alongside of a dory, such as shooting up and tacking at the same time, thus reaching the dory and shooting to without the jib to windward, and occasionally, when the winds are light, a vessel may be run alongside of the dory and it may be picked up while she is going before the wind.

SHOOTING ALONGSIDE OF A WHARF.

This is an evolution which is constantly being performed in any of our larger fishing towns, but while it is of such common occurrence and is, almost without exception, performed with an astonishing degree of skill and judgment, there are so many different ways of performing the maneuver, dependent upon surrounding circumstances, that only a few of those in common use can be given here. It is, perhaps, scarcely necessary to say that on returning from a voyage it is the ordinary practice for a fishing vessel to go at once to the wharf where her cargo is to be landed and where she will be refitted for another cruise. This might be accomplished, as with larger vessels, by first anchoring and either being towed in by a tug or hauling in by warps without any great risk or display of skill, but this would involve a loss of time and an amount of extra labor which it is at all times desirable to avoid. One of the most common ways of shooting alongside of a wharf, when the wind is blowing from it, is for the vessel to be kept under sail and under headway until she approaches comparatively close to it and some distance to leeward. The head sails are then hauled down and she is luffed to the wind, after which the mainsail is lowered. It is customary at such times for the skipper, or master, to take a station where he can command the scene. An experienced man is placed at the wheel, who steers the vessel in conformity to the orders of the captain. Other men stand by with ropes to throw out as the vessel approaches the wharf, these being fastened by persons on the wharf in readiness to receive them. The headway of the vessel is thus checked and she drops into her berth. To shoot into a wharf with a free wind all sails are hauled down while the vessel is yet some distance from it and she is allowed to run in with bare poles. This, however, can only be accomplished with safety when there is a comparatively moderate wind, or when perhaps the tide is partially ebbed, so that the vessel may bring up on the bottom. It is by no means an unusual occurrence for a vessel to shoot alongside of a wharf with her mainsail, and sometimes her foresail, up when the wind is blowing from it.

LEE-BOWING ANOTHER VESSEL.

At the present time this evolution is seldom performed. When mackerel were taken by jigging or with hook and line, one vessel would sometimes attempt to draw away, or "toll," a large school of fish from another. This was done by heaving to, either under two sails or under mainsail, close under the lee bow of the vessel which was catching the fish and by throwing out of a great amount of "toll" bait. The mackerel usually followed this bait, and the consequence was that the leeward vessel soon had the best fishing. This maneuver corresponds, in many respects, to heaving to alongside of a seine-boat, since the vessel must be stopped directly under the lee bow of the other, but of course it differs in that she is not brought as close to the windward vessel as she would be to the seine boat. Some twelve to twenty years ago it was not uncommon on our New England coast, especially in the fall, to see from two hundred to four hundred or even five hundred sail of vessels lying to, in apparently a compact mass, fishing for mackerel. This was the result of one after another lee-bowing such vessels as had secured good fishing.

RUNNING A VESSEL UPON A LEE SHORE.

Most of the fishing vessels are employed at all seasons of the year, and probably more exposed than any other class of vessels to the dangers incident to approaching the land. One of the greatest of these dangers is being caught on a lee shore. Vessels are seldom compelled to resort to the expedient of running on the land in a gale, for they are usually well provided with ground tackle to ride out at anchor almost any gale. This expedient is almost always resorted to when others fail. Occasionally, however, a vessel may be caught on a lee shore in a heavy gale, in which she is unable to carry sufficient sail to work off, and may not be provided with proper tackle for holding on at anchor. When it is quite certain that the vessel will be driven ashore by the force of the gale (it may be during the night), it is considered more prudent, for the safety of the men, to run the vessel "head on" upon the land while it is yet light enough to select the best place "to beach." When such a course is decided upon, it is customary to set all the sail that the vessel can carry, and to keep this on her even after she has struck, if it be a sloping shore, until she has been driven up as high as the winds and waves will force her. If this is done at high tide or on the first of the ebb, it is probable that the crew will be saved. There have been numerous instances in the Bay of Saint Lawrence, especially on the north side of Prince Edward Island, or in the bend of the island, as it is called, of fishing vessels running ashore in this manner. The vessels have sometimes been driven so high that they were but little injured, and after the abatement of the storm were again launched and employed in the fisheries for many years thereafter.

In the fall of 1851, and again on August 23 and 24, 1873, many instances of this kind occurred in that locality, together with many of a sadder nature, which will long be remembered by those interested in the fisheries.

JUMPING A VESSEL OFF A LEE SHORE.

When a vessel strikes on a ledge a heavy press of sail may be set, and by careening the vessel down she may "jump off." This maneuver is often assisted by the sea, as the vessel, with a crowd of sail on her, will move ahead as often as she raises on a wave, and unless the ledge is too near the water's surface for her to pass over, or other circumstances are very unfavorable, the attempt is generally successful.

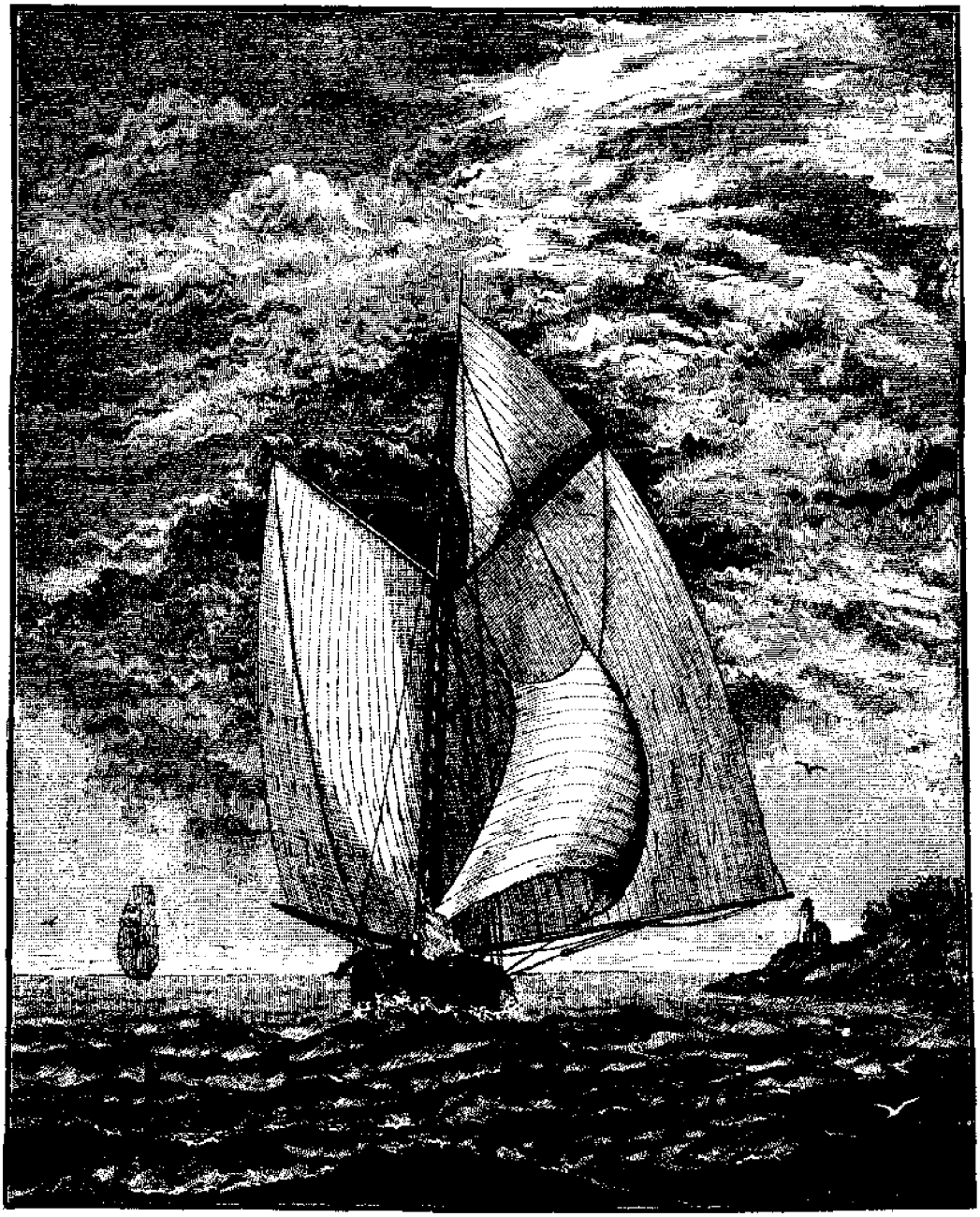
53. AMOUNT OF CANVAS CARRIED BY A SCHOONER.

Although a schooner can carry more sail when the wind blows from a direction abaft the beam, her peculiar excellencies are best seen when the wind is forward of the beam, and when she is said to be "sailing by the wind."

In discussing the amount of canvas carried under different circumstances by the same vessel, we propose to speak of her management (1) when sailing with the wind "on the quarter," (2) when sailing "by the wind," (3) when sailing with a "beam wind," (4) when sailing with the wind "astern."

Wind coming from a direction abaft the beam—that is, stern winds and quarter winds—are called "free winds," while those at right angles to the keel are beam winds, and those blowing from a direction forward of the beam are called "scant" or "head" winds.

The difference between a "scant" and a "head" wind is thus defined: When a vessel can keep on her course while sailing by the wind, it is called a "scant wind," but when she is unable to do this it is called a "head wind," a head wind being any wind which necessitates tacking back and forth—that is, beating to windward.



Fishing schooner running before the wind, wing and wing, with the staysail scandalized.

Drawing by Capt. J. W. Collins.

While this may not be the place to discuss the ability of the schooner to sail close to the wind, it may be stated that the average fishing schooner may be steered within five points of the wind, and the best sailers, under favorable circumstances, within four points. In this respect their performance is equal to that of many yachts. There are probably no modern vessels in the New England fishing fleet which cannot sail within five points of the wind. To sail within four points of the wind it is necessary for a vessel to head northeast when the wind blows directly from the north or at an angle of 45° with the direction of the wind; when sailing within five points of the wind the vessel would be heading northeast by east—the wind being still from due north—or at an angle of 56° 30′. When a vessel is sailing more than five points off from the direction of the wind, she is no longer sailing "by the wind," and the sheets must be slackened and the sails allowed to go farther out upon the leeward side. As her course deviates farther and farther from the direction of the wind she is said to be running with "free sheets," until the wind becomes "abeam" or at an angle of 90° to the direction of her keel. When the wind comes from a direction which is more than 90° from that in which the bow is pointed and at an angle as great as or in the vicinity of 135°, she is said to be sailing with the wind "abaft the beam." When the wind is about 45° abaft the beam, she is sailing with the wind on her quarter, the direction of the wind having the same relation to the stern of the vessel that it had to the bow when the vessel was sailing "by the wind." When the wind is blowing in such a way that its direction forms with the keel an angle of less them 45°, the wind is said to be "aft," and if directly astern, the vessel is said to be sailing "dead before it."

WITH THE WIND ON THE QUARTER.

The average schooner sailing with the wind "on her quarter," with her fullest complement of sails, will carry all her sails until the wind blows what the fishermen would call a "good breeze." The first sails to be taken in, as the wind freshens, are the balloon-jib and staysail. This is necessary in order to prevent the topmasts from being carried away. A vessel carrying all her sails with a fresh breeze would probably heel over until her scuppers touched the water, and sometimes deeper, before it would be necessary to take in the balloon-jib and staysail, and, under these circumstances, would sail at the rate of 10 to 12 knots an hour.

Under these conditions the vessel makes its best speed, the water usually being smooth and the "point of sailing" favorable. Large vessels belonging to the port of Gloucester and other fishing ports have, under such circumstances, made a speed of 13 or 14 miles an hour.

As the breeze increases in strength the foretop-sail and then the maintop-sail are removed. The heeling over of the vessel would remain about the same, and her speed would be practically undiminished. The flying-jib is next taken in. The vessel is now moving ahead with what is called a "whole-sail breeze," and when the jib, foresail, and mainsail are set, is said to be under "whole sail," the other sails being known as the "light sails."

The differences in the shape and rig of vessels render it possible for some to carry a certain amount of sail much longer than others, and to heel to an extent which would be dangerous to others. The average schooner must shorten sail when the lee-rail is level with the water.

With a whole-sail breeze and a comparatively smooth sea the speed of the vessel remains about the same as when the breeze is lighter and all sails set. It is supposed that a whole-sail breeze, for a vessel with the wind on her quarter has a velocity not far from 30 miles an hour.

A schooner-rigged vessel will carry a larger proportion of sail in comparison with a square-rigged vessel when sailing by the wind than under any other circumstances. As the wind increases, the mainsail is taken in and reefed. It is usually the custom at such times, especially

if the wind is increasing rapidly, to put either a single or a double reef in the mainsail. The Gloucester fishermen usually put in a double reef at once. At the same time the bonnet is taken out of the jib. When it has become necessary to shorten sail to this extent the sea is always rough and the speed of the vessel may be somewhat diminished, perhaps to 9 or 10 knots.

As an instance of speed made under such circumstances, it may be stated that the schooner William H. Foye, in the spring of 1875, made a passage to the Western Bank, a distance of 380 miles, in about forty-two hours, or an average speed of 9 miles an hour, running almost all the time under reefed mainsail, jib with the bonnet out, and whole foresail.

Before it is necessary to shorten sail further the wind has strengthened to nearly a gale. The pressure upon the foremast is now so great that it soon becomes necessary to reef the foresail, to prevent the foremast being carried away.

If the wind is increasing rapidly two reefs are at once put in the sail; if otherwise, a single reef. A vessel with mainsail and foresail double reefed and the bonnet out of the jib can carry that sail, while running free, until the wind blows a gale.

The following instances illustrate the relative amount of sail carried by schooners and square-rigged vessels when it is necessary to put the former under this sail:

The schooner Ocean Bell, in the spring of 1874, while on a passage to Gloucester from the Grand Bank, sailing under double reefs, fell in with and passed a large bark, head-reaching under close-reefed topsails and foretop-mast staysail. Again, in the autumn of 1875, the schooner Howard, under double reefed sails, fell in with and passed a large bark lying to under a goose-winged lower maintop-sail, having no other sail set. Numerous and possibly more striking instances of this sort might be related. These schooners were sailing by the wind, and under these circumstances the comparative merit of the schooners appears at best advantage, although they cannot carry the sails so long when sailing by the wind as when the wind is on their quarter. A schooner with the wind as last mentioned may carry this sail until the wind blows a smart gale, and it is more frequently the case that they have to shorten sail still further on account of the roughness of the sea, and the consequent heavy lurching, than because of their inability to carry so much canvas. The wind is now whistling, or, in fishermen's phrase, "squealing" through the rigging; and even an ocean steamer, if heading the sea or in its trough, would be tossing about in a manner which would be very uncomfortable and alarming to most of the passengers.

As the sea and the wind increase there is a danger of carrying away the main boom, the end of which is frequently dipped under as the vessel lurches to leeward. The mainsail is now, therefore, taken in and furled, and in its stead the riding-sail, especially on the Bank vessels, is bent to the mainmast and hoisted, this sail being without a boom and considerably smaller than the two-reefed mainsail, therefore causes the vessel to lurch much less than when she has the long main-boom over her lee quarter.*

Under the present arrangement of the sails, riding-sail, double-reefed foresail, and jib without the bonnet, the vessel continues until the wind blows a heavy gale.

When a schooner is going ahead under these sails an ocean steamer would be making slow progress if heading the wind, and would be obliged to alter her course to avoid lying in the trough of the sea if she should be steering with the wind abeam.

In the heavy gale of January 27, 1879, the schooner Marion, of Gloucester, while running under this sail, passed a large ocean steamer near the Western Bank, making slow progress to the west-

* Sometimes the riding-sail is not set, but the vessel is allowed to run under double-reefed foresail and jib. The method of setting the riding-sail as described is, however, perhaps the most common.

ward, with the wind on her starboard bow, and having only the fore and main spencer set. During this gale several merchant and fishing vessels met with disasters. The sea at this time is so high that it is frequently necessary to run nearly dead before the wind to prevent the vessel being "knocked down" or "tripped," or a sea boarding her on her quarter. The next move is to take in the riding-sail and jib and furl them up. When this becomes necessary the wind is blowing nearly a hurricane. The vessel is now running under a double-reefed foresail, and can continue under this sail as long as the canvas will stand. Instances in which it has been blown away are not unusual. Fishing vessels are not often obliged to come down to a double-reefed foresail in the summer months, though they do so sometimes during the so-called "fall hurricanes." In the winter a voyage of a few weeks is seldom made without running under double-reefed foresail at least once, and, in many instances, ten or twelve times during the trip, particularly if long passages are made.

It is unfortunate that there is no means of estimating the force of the wind as it blows in mid-ocean, but many observers consider that its velocity far exceeds anything that has been recorded on the land, except perhaps at such exposed locations as the top of Mount Washington.

When the anemometer at the signal station on Thatcher's Island records a wind velocity of 65 to 70 miles an hour, it has been reported that fishing vessels in the immediate vicinity have, in some cases, carried double-reefed foresail and mainsail, and jib without the bonnet, and, in other instances, double-reefed foresail, jib with two bonnets removed, and riding-sail. This, too, was when they were sailing by the wind and carrying less sail than they could carry had they been running free. The remarks with reference to sailing with the wind "on the quarter" apply in a general way when the wind is "abaft the beam" or "well aft."

SAILING "BY THE WIND."

When the vessel is sailing by the wind the management of the sails is similar to that already described, except that sail is reduced sooner as the wind increases in force. The sheets being hauled tight, the booms, within a few degrees, parallel to the line of the keel, and the sails showing a flat surface to the wind, a much greater lateral pressure is brought to bear upon the vessel. A vessel running free is, of course, going in the same direction as the wind, and feels its force in a less degree. A vessel sailing by the wind will come down to double-reefed sails, when, with the wind on her quarter, she might, perhaps, carry whole sail. When a vessel running with the wind on her quarter would be under double-reefed sails, one sailing by the wind would need to be "hove to" under double-reefed foresail.

WITH THE WIND "ABEAM."

When the vessel is sailing with the wind abeam sail is reduced in the same manner as already described. When the wind is abeam sail can be carried longer than when sailing by the wind, though not so long as when the wind is on the quarter. This is not so much on account of limitations connected with the management of the sails themselves, but because when a gale is blowing it is necessary to avoid sharp seas directly upon the beam, which are frequently very dangerous and sometimes result in "knocking the vessel down." Occasionally a vessel sailing with the wind on the beam must be "hove to" sooner than when sailing "by the wind," and always sooner than with the wind "on her quarter."

WITH THE WIND ASTERN.

When the wind is astern a comparison between the schooner and the square-rigged vessel is least favorable to the schooner, except perhaps during very light winds. Every possible device

is used to spread the sails to the wind. The most common one of these is "winging them out," which is done by having the mainsail and main-gaff topsail on one side and the foresail on the other, with their sheets slackened well off, so that the sails are nearly at right angles with the direction of the vessel, and in such a position as to receive the greatest amount of pressure from the wind. When running "winged" the main jib is generally hauled down, and sometimes also the other jib or jibs. It is useless at this time to set the staysail in its proper place, and when the winds are moderate it is therefore frequently set to leeward opposite the foresail, and in such a manner that it catches the wind which passes through between the mainsail and foresail, adding materially to the speed of the vessel. This method of setting it is called "scandalizing the staysail." The rate of speed attained by vessels with their sails "winged out" is nearly the same as with the wind "on the quarter." Sail may be carried thus for a long time, but it is not customary to do so, because it is difficult to take in sails during strong winds when they are "winged out." A vessel will sail under double-reefed mainsail and foresail "winged out" when, with the wind on her quarter, she would be running under the same sails with the jib up. Much caution and judgment is needed in sailing with a freshening wind astern. Headstrong skippers have carried whole sails in this manner when the wind was blowing a gale. Serious damage has sometimes resulted as a consequence.

54. MANAGEMENT OF DISABLED VESSELS.

In the chapter on disasters the injuries to which fishing vessels are liable have been fully discussed. Each kind of injury is repaired in its own way. There are, however, certain kinds which are repaired in a peculiar manner, requiring special skill and daring on the part of the fishermen. A few of the most prominent of these will be mentioned: (*a*) Management of vessels which have lost their spars. (*b*) Repairing damages to the rigging. (*c*) Repairing or improvising of sails. (*d*) Repairing or improvising rudder. (*e*) Repairing leaks. (*f*) Righting vessels which have been knocked down. (*g*) Repairs of boats.

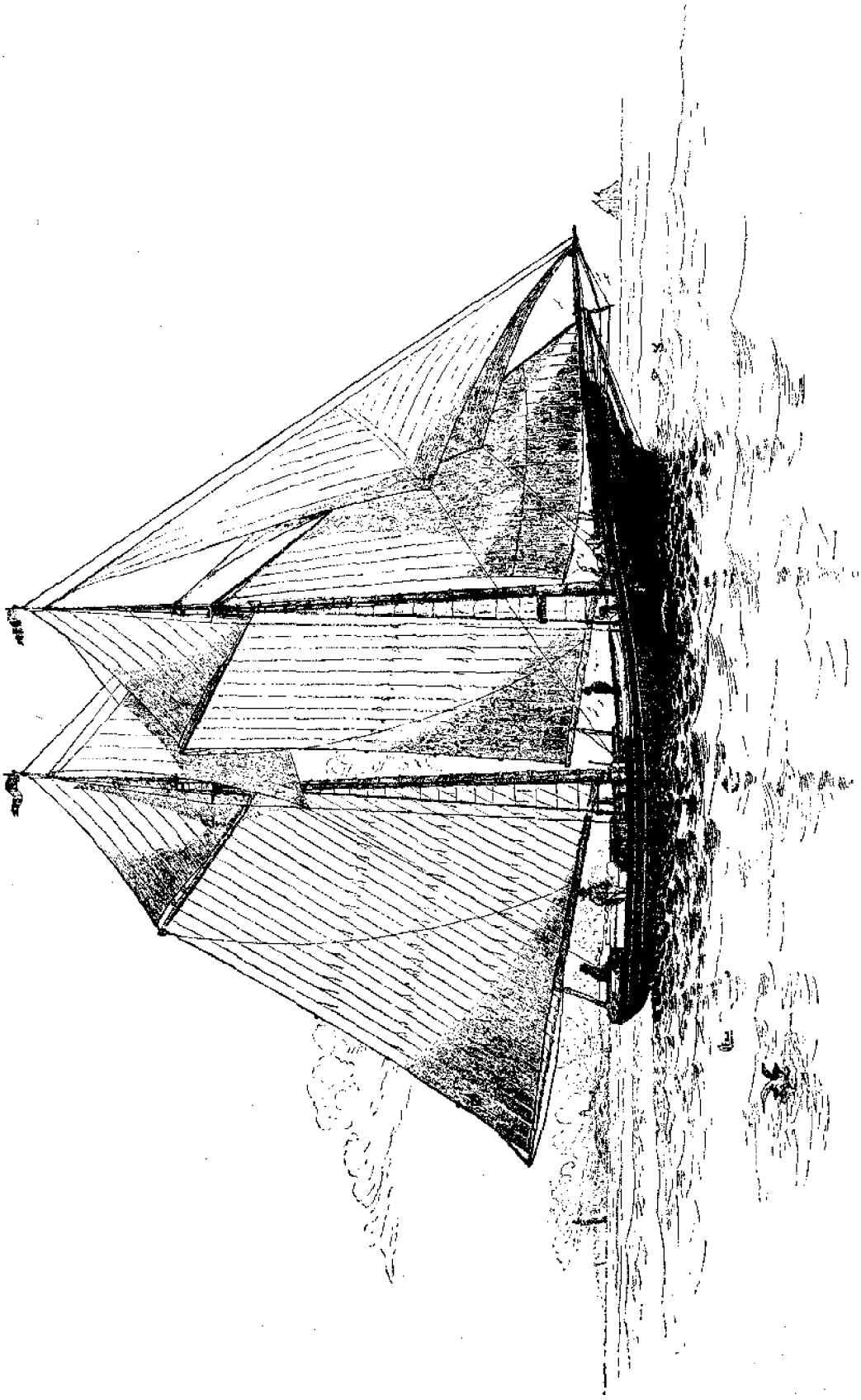
MANAGEMENT OF VESSELS WHICH HAVE LOST THEIR SPARS.—When the topmast is carried away, generally no attempt is made to supply another at sea, although in some cases it is fitted anew and replaced.

The main boom, if carried away, is generally "fished" by means of an improvised apparatus, which can usually be made to answer every purpose.

In the case of losing a flying-jib boom attempts are rarely made to repair it at sea, as most of the fishing vessels can do without it.

The fore boom and the fore and main gaff are frequently "fished" or repaired in such a manner when broken that they will answer until new ones can be obtained.

When the foremast is carried away or broken, a purchase is usually taken from the mainmast head and hooked into the eye or to the upper end of the jib stay, and hauled taut, so that the mainmast may receive support, and at the same time the jib may be set on the stay. By this means the vessel is enabled to sail under her jib and mainsail, and perhaps with the staysail set between the masts, as well. This arrangement is feasible when the mast is broken but a short distance above the deck. When, however, it is broken near the cross-trees the jib-stay may be placed on the foremast, and a reefed foresail and a jib with the bonnet out may be set instead of the sail as already described.



Mackerel schooner *under full sail, close-hauled by the wind.*

Drawing by H. W. Elliott and Capt. J. W. Collins.

When the mainmast is broken or carried away, if broken close to the deck, it is difficult to set any after-sail unless a jury-mast is rigged. This may be done by lashing the main boom or some other spar to the stump of the mainmast and attaching the halyards to its top, in such a manner that either a reefed mainsail or riding-sail may be set on it. When, however, the mainmast is broken higher up, it frequently becomes possible, by shortening the shrouds and putting on a "preventer spring-stay," to set a reefed mainsail, or, more commonly, a riding-sail, which, together with the jib and foresail, generally enables the vessel to make fair headway, even against a head wind. Vessels rigged in this manner have often made passages of 600 to 800 miles in a reasonably short time.

When the bowsprit is carried away or broken, either by a sea or by carrying sail, the jib-stay is usually taken in through the "hawse-pipe" and hove taut on the windlass, in such a manner that the jib with the bonnet out may be set on it, and thus the vessel can make steerage way on the wind by having the mainsail reefed; but when running free, may be able to carry the whole mainsail.

Vessels are sometimes so unfortunate as to lose all their spars. It then becomes necessary that jury-masts should be improvised, in order that the vessel may reach port without assistance. There are many ways of doing this, as well as performing the other operations we have mentioned, which can only be determined by the surrounding circumstances. The most general method is to lash some light spar, boom, or gaff, or perhaps even the jib sheet traveler, to the stump of the mast, having the halyard-blocks attached to the topmost end, whereby the sails may be hoisted; fishing vessels rigged in this manner have often arrived safely in port without assistance.

REPAIRING DAMAGES IN THE RIGGING.—Fishing vessels, in common with all other sea-going vessels, are very liable to have their rigging broken or otherwise damaged while at sea, in such a manner that it is of the utmost importance that it should be repaired promptly, both to insure the safety of the vessel and the prosecution of the voyage. As vessels are now rigged, however, one of the accidents of this kind to which they are most liable is that of having the iron work, by which the rigging is attached, broken rather than the rigging itself. On fishing vessels this more frequently occurs to the iron-work connected with the bobstay and jib-stay than to that of any other, since upon this is brought to bear a very heavy strain. These accidents are more likely to occur during gales when there is a heavy sea running than at any other time, and generally call for a display of skill and seamanship such as is rarely needed elsewhere. Usually, when the iron-work on the stem to which the jib-stay sets up is carried away, the end of the stay is taken in through one of the hawse-pipes and set up by tackles to the windlass and secured in a proper manner. It is quite often the case that the iron work at the end of the bowsprit to which the bobstay is attached is broken, and it sometimes becomes necessary to replace this and to set the bobstay up anew, even under the most difficult and dangerous circumstances. Fishing schooners are occasionally liable to have their spring-stays unhooked, or the bolts in the shackles get loose, in such a manner that the mainmast is left without that support. If this occurs when the vessel is under sail, it can be usually replaced without a great deal of trouble by running the vessel before the wind, so that the mainsail may assist to keep the mainmast straight.

If lying at anchor, however, or under some other circumstances, it is generally necessary to get a strap on the mainmast, to which a purchase from the foremast is hooked and the head of the mainmast hauled forward far enough to enable the men to attach the spring-stay in its proper position. The performance of this duty is usually one requiring a great amount of skill and judgment to successfully accomplish it.

The parting of shrouds, laniards, &c., are accidents to which all vessels are liable, and the

same methods of repairing these are adopted on fishing vessels as on other vessels. These methods are fully explained in all manuals of seamanship."

Vessels engaged in the Bank fishery always have their bobstays and the lower part of their jib-stays provided with chafing-gear, to prevent the cable from coming in contact with them. It sometimes happens that while the vessels are riding at anchor in gales of wind this chafing-gear gets loose, and there is imminent danger of the cable being chafed off and lost on that account. To repair this damage and to prevent the loss of the cable there is generally required a great amount of daring and skill on the part of the fishermen, and many schemes are resorted to for the accomplishment of this end, none being, however, free from danger.

The parting and consequent replacing of running rigging is something that is of such frequent occurrence and so common to all vessels that it hardly need be described at length in this place.

REPAIRING OR IMPROVISING SAILS.—The ordinary repairs to the sails made necessary by their being torn, &c., do not differ materially from those on other vessels. We may mention here that in one instance, at least, a great deal of ingenuity was exhibited by fishermen in improvising sails from their bed-clothing, and their vessel, the schooner Onward, of Gloucester, came safely into port. It may also be said that the riding-sail, which we have before described, is frequently substituted for a jib when the latter sail has been damaged or blown away, and is also made to do duty for either the mainsail or foresail, which may have been rendered unfit for use. The staysail may be used to take the place of either the mainsail or foresail in light weather, and occasionally the gaff topsail is substituted for a jib, or even for a flying-jib.

REPAIRING OR IMPROVISING A RUDDER.—Since fishing vessels are liable to lose their rudders at sea, it is highly important that some means should be devised for steering, in order that the vessel may reach port without assistance. Various contrivances have been resorted to, among which we will name the following:

(*a*) By taking an anchor-stock and lashing to one side of it successive tiers of the hawser or cable. Then the bight of a rope is attached to its lower end, and another farther up, at the upper part of the hawser. It is then put overboard and the upper end of the anchor-stock is brought into the rudder-port. The ends of the ropes attached to it are then taken forward and hauled taut on either side in such a manner that the improvised rudder is held in its proper place. The tiller is next lashed to the upper end of the stock, and this serves the purpose very well, and a vessel can usually be steered with it without much difficulty. Sometimes plank or timber may be substituted for the hawser. In cases where an anchor-stock is not to be had a light spar, gaff, topmast, or even the jib-sheet traveler are taken instead.

(*b*) Another method is to make a coil of hawser, which is securely lashed together in all its parts. This is towed astern, and the movements of the vessel are controlled by tackles leading from either side of the stern to the standing parts of the hawser, the direction of the vessel being changed by hauling in either one or the other of these.

(*c*) A cask filled with water is sometimes substituted for a coil of cable, and may be made to answer nearly the same purpose.

REPAIRS FROM LEAKS.—The method of repairing leaks caused by collision is the only one that will be considered here. It sometimes happens that fishing vessels are cut down by another nearly to the water's edge, and, unless repaired promptly, are liable to sink before reaching a place of safety. In such cases a man is generally lowered over the side and fastens over the aperture some canvas, over which boards are fastened, if they are obtainable. If this is well done the vessel can be tightened so that she may reach port without accident.

RIGHTING VESSELS WHICH HAVE BEEN KNOCKED DOWN.—Although most of our fishing vessels

have their ballast secured in such a manner that it is not liable to give way, this can not be said of the Bankers engaged in "salt fishing," which depend entirely upon their salt for their ballast. This salt is stowed in "pens," or "bins," built in the hold, and if they are not well built they are very liable to give way when the vessel takes a heavy lurch. This sometimes occurs in a gale, and when it does the vessel is generally "knocked down" in consequence, and thus placed in a very dangerous position. At such a time, when the vessel is lying nearly on her beam-ends, the hold cannot be reached by the usual manner of going through the hatches, and the only thing to be done is to enter the hold through the bulkheads from either the forecastle or cabin. She is then "righted up" by shoveling the salt to windward. This plan is not always successful, since losses have occurred from this cause. Before it was customary to secure the ballast as it is now, it occasionally happened that a vessel was "knocked down," shifting her ballast into the lee side, as the Bankers shift their salt, rendering it necessary for the same efforts to be made in order to bring her again upright.

REPAIRS OF BOATS.—Vessels engaged in the Bank fishery, especially in the winter, are more liable than others to have their dories injured. It frequently becomes necessary that the fishermen should be able to repair them. Many of the men become adepts in this kind of work, and there are quite a number of instances recorded where, by exhibiting their skill and ingenuity in repairing boats almost entirely destroyed, they have succeeded in making a good voyage, which otherwise would have resulted in considerable loss to all concerned.

This applies more particularly to our cod and halibut fishermen, since the whalers are generally provided with professional boat-builders and carpenters, especially hired for the purpose of repairing boats that are damaged, and for constructing new ones.